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laboratory. The closing chapter, on "Physics Teaching in Other Countries," contains much that is interesting and encouraging. He concludes that the best secondary schools in America have little or nothing to learn concerning the teaching of physics from the corresponding schools in Germany, France and England.

The book in both its parts is worthy of the highest commendation, and its authors are entitled to the gratitude of all who are interested in the progress of science in education.

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*The Newtonian Potential Function.* By B. O. PEIRCE. Third revised and enlarged edition. New York : Ginn & Co.

THE principal change made in the third edition is the addition of a large number of miscellaneous problems at the end of the work. These problems are accompanied by occasional indications of solutions and by notes, and contain important results in attractions, electrostatics, magnetism, and current electricity. They constitute a valuable addition.

The book has two divisions, the first consisting of four chapters on gravitation the potential function, surface distributions of attracting matter, Green's theorem, the properties of vectors, and the attraction of ellipsoids; and the second division of one chapter, which is divided into four parts, on electrostatics, electrokinematics, electromagnetism, and current induction. The exposition of the equation of Laplace, the theorems of Green, Gauss, and Stokes, and Dirichlet's principle, is accompanied by much illustration, and the treatment is given an elementary character by copious and careful explanations. The elements of the mathematical theory of electricity in the second division are quite complete, but are not based on general dynamical principles, as, following Maxwell and Helmholtz, is done by Webster and other writers, giving a more advanced treatment. No use is made of the method of variations or of generalized co-ordinates in deriving the equations which relate to dielectrics or to electromagnetic induction. The generalized equations of Poisson are introduced as giving the result of experiment on dielectrics. In some places the two-fluid theory of electricity is used as a convenient physical analogy.

The first chapter contains the statement of the law of gravitation and the determination of the attraction exerted by bodies of various forms. The interesting problem of the variation of latitude due to a hemispherical hill is treated. The second chapter defines the potential function due to attracting matter and determines it in particular cases. The question of the continuity of first and second derivatives of the potential function is discussed. The equations of Laplace and Poisson and the theorem of Gauss are derived. The third chapter is devoted to the potential function in the case of repelling forces. The fourth chapter gives a treatment of surface distributions, of Green's theorem, of Dirichlet's principle, and of the attraction of homogeneous ellipsoids.

The fifth chapter, which comprises more than one-half of the book, exclusive of the problems, applies the results of the first four chapters to electricity. The properties of electric distributions and of tubes of force are given, as well as the important facts about condensers, the energy of charged conductors, specific inductive capacity,

and polarized distributions of attracting matter. Steady currents, the law of Ohm, and the electromagnetic field due to linear currents, solenoids, and ring magnets comprise the matter of Parts II and III. In Part IV the laws of electromagnetic induction are developed. The results of periodic electromotive force with application to the alternate current transformer constitute an important practical application. The general equations of the electromagnetic field form the concluding subject of the book.

It is not possible to mention by any means all the topics treated in this work. It forms a good introduction to the more advanced works on electricity and magnetism. Although written to accompany university lectures, it is to be highly recommended for private study.

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*An Introduction to the Industrial and Social History of England.* By EDWARD P. CHEYNEY. Pp. x + 317. New York: The Macmillan Co., Price, \$1.40.

THIS volume is characterized in the preface as a text-book for college and high-school classes. It certainly meets their requirements in a uniquely satisfactory degree. But it is to be regretted that the author's modesty led him thus to underemphasize, on the threshold, the original work embodied so freely in the text.

Chap. 2 of the book is devoted to "Rural Life and Organization, 1250-1350;" chap. 3 to "Town Life and Organization," and chap. 4 to "Mediæval Trade and Commerce," for the same century. These three chapters are the foundation of the book. The six succeeding chapters exhibit, in chronological, clear-cut and learnable periods, the subsequent economic and social development of England, and conclude with a discussion of "Trade Unions, Trusts, and Co-operation." To each chapter is appended a critical bibliography.

Chap. 1 sketches admirably the national history up to 1350, and the introductory sections of chaps. 5-9, inclusive, are likewise devoted to national affairs. It is, of course, difficult to determine what to do with "political" history in a work of this kind; but it would seem preferable, all considered, heroically to take it for granted. There can be little doubt that a scheme which involves for example the presentation of the history of Europe, 1789-1815, in one page (200) is vulnerable. The forty-odd pages given over to "correlating matters of economic and social history with other aspects of the life of the nation" (preface) could be employed to better advantage.

For, in these days of interest in origins it is a trifle awkward to turn one's back on matters industrial prior to 1250. Conceding that the material for this earlier period is not satisfactory, still something considerable can be done, and it should be done to round out this valuable study.

The book is well balanced and even in quality, with the exception of chap. 2, which fails to present a living picture of the agricultural life of the time. The apparently undue length of the chapter on the "Black Death and Peasants' Rebellion" may be excused because of the light it sheds on a difficult period.

Naturally some errors are to be discovered. Thus, in the discussion of the Navigation Acts, it is stated that the acts of 1651 and 1660 forbade all importation of goods into England "from any ports of Asia, Africa, or America, except in vessels belonging to English owners, built in England and manned by English seamen" (p. 192). A